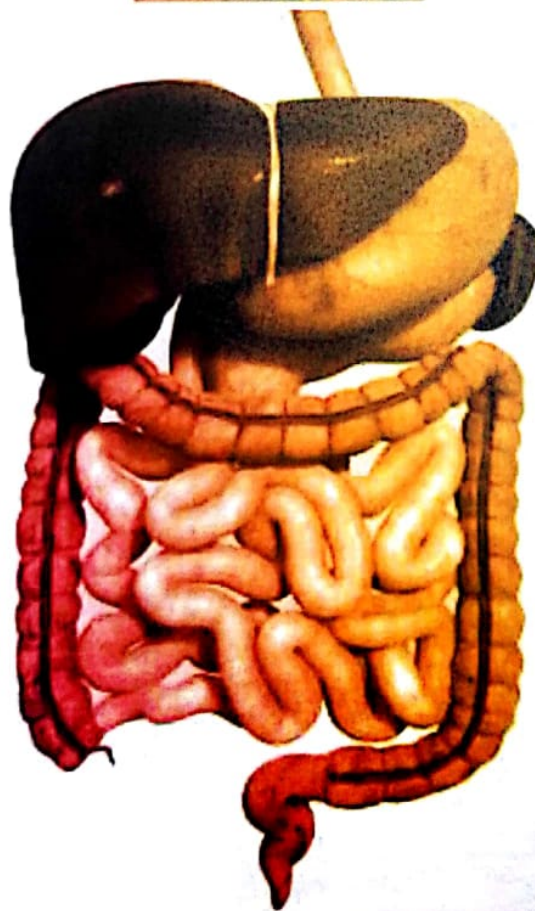


Easy Pathology

— Dr. Abdelrahman Khalifa —

GIT

Part II



Ain Shams 2017 - 2018

VISIT...

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Idiopathic inflammatory Bowel disease (IBD)

Chronic inflammation of intestine due to exaggerated **immune** reaction against flora

Incidence: Females > males, more common in Fair white & blondes, 20-40 y

Aetiology & pathogenesis: (theories)

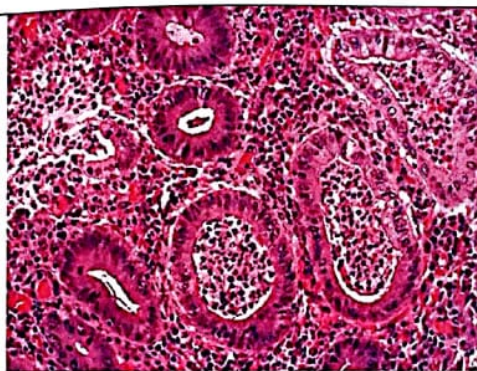
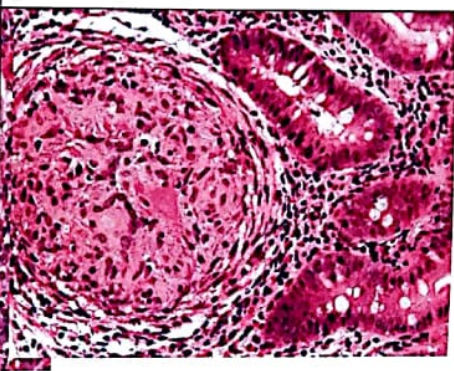
Genetic – T cell dysfunction – Epithelial defect (abnormal Paneth cell in Crohns) - **Immune**

Deep

Superficial		Ulcerative colitis (UC)	Crohn's disease
Def		IBD with ulcerative inflammation	IBD with granulomatous inflammation
Sites		Colon (starting in rectum)	Any site of GIT (more common in <u>cecum</u> and <u>terminal ileum</u>)
Distribution		Retrograde ascending & diffuse	Skipping lesions
Gross	Lumen	Normal	Narrow
	Mucosa	Congested multiple small superficial ulcers pseudopolyps * Inflammation Cells & Granulation Tissue	Congested ' cobble-stone appearance' deep longitudinal ulcer (fissures)
	wall	Less thickened	Thick
	Serosa & LN	Normal	Inflamed
	Clinical	Attacks of bloody mucoid diarrhea	Attacks of <u>diarrhea</u> , fever, abdominal pain
Ulcers		superficial	deep

"Severe
T.I.F."

Dr. Abdelrahman Khalifa, M.D., PhD.

Micro	Lymphocytes & other inflamm. cells	In mucosa & submucosa	Transmural
	Crypt abscess	More common	Less common
	Epithelial changes	Atrophy – metaplasia – dysplasia "Sq."	Atrophy – metaplasia – dysplasia "Sq."
	Reduced goblet cells	Goblet cell depletion	Goblet cell depletion
	Sarcoid-like granuloma	Absent	>35% (diagnostic finding)
			
Complications		2ry infection → toxic megacolon Bleeding Mild Fibrosis → no stricture -no fistula Malignant transformation (more) No malabsorption Extra-intestinal (P tyderma – U veitis – S clerosing cholangitis) التهاب و تضيق في القناة المعوية	2ry Infection absent "No T.M." Less Marked Fibrosis → stricture "Already Narrowed Lumen" fistula "Deep." Malignant transformation Malabsorption "S.I." Extra-intestinal (P olyarthritis – U veitis – S pondylitis)

المعوية
Congenital dis. of colon: Malrotation – Reduplication – Congenital megacolon

Congenital mega-colon (Hirsch-sprung disease)

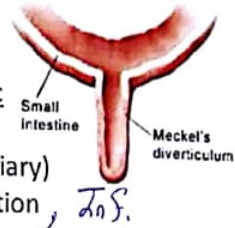
- Congenital absence of nerve ganglia in part of the colon mainly rectum (**aganglionic segment**) → **contracted segment + proximal dilatation**
- **Micro:** Absence of ganglia in affected segment



Diverticula

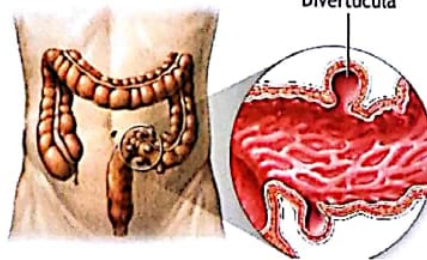
• Congenital (Meckel's)

- Incomplete obliteration of vitelline duct → blind ended pouch
- Site: 30 -90 cm (50) distant from ileocecal valve. Antimesenteric
- Gross: 2-8 cm (5) long . may be attached to umbilicus
- Micro: Intestinal tissue + **ectopic tissue** (gastric, pancreatic, biliary)
- Complications: peptic ulcer, perforation, volvulus, intussusception, TnS.



• Acquired:

- Herniation of **mucosa** & S.M. through muscle
- Gross: **Multiple**, flask-shaped between tinae
- Micro: **Thin** wall, flattening of all layers
- Lead to → Diverticulitis, perforation, Fibrosis & intestinal obstruction



Sites of Sigmoid "Mostly In Old Age"

في القولون الغليظ
في القولون

Tumors of small intestine

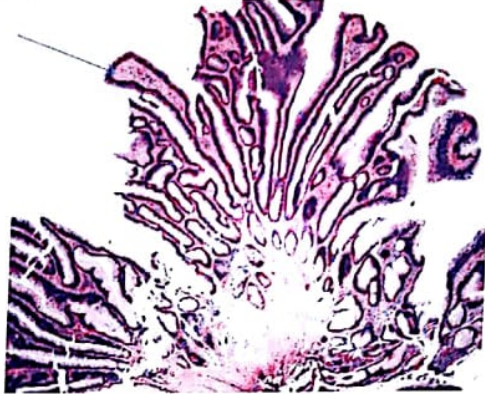
- Benign: Adenoma, fibroma, Lipoma....
- Malignant:
 - Adenocarcinoma
 - More in **duodenum**, Ampulla & jejunum
 - Annular
 - intestinal obstruction, obstructive jaundice, or pancreatitis
 - Lymphoma
 - Carcinoid
 - GIST

Colonic polyps

Non neoplastic

- **Hyperplastic** polyp
- **Hamartomatous Juvenile** polyp "Congenital"
 - Rounded, 2-5 cm → 10 cm
 - The core contains **cystically dilated glands** (retention cysts)
 - Occur in **children**
- "**Peutz-jegher**" is a similar polyp occur in adults + **buccal melanin** pigment + high risk of **multiple malignancies**
- **Inflammatory polyp** (e.g. **Bilharzial**, pseudopolyps of UC)
- **Lymphoid polyp**: Lymphoid hyperplasia

Neoplastic polyps**Adenomatous polyps (dysplastic glands)**

1-Tubular adenoma	2- Villous adenoma
More common	Less
Pedunculated	Larger, sessile
The core contains tubular glands with dysplasia	Villi covered by columnar epithelium with dysplasia
	
Precancerous	More precancerous

Risk factors of malignant transformation : Size & Grade of dysplasia

3-Tubulo-villous (mixd type)**4- Familial adenomatous polyposis**

- Hereditary disease , **A.D.** inheritance of (**APC**) mutation
- **H**undreds of adenomatous polyp (mixed, mostly tubular)
- **H**ighly precancerous. Carcinoma risk is 100% by the age of 40

**Complications of adenomatous polyps:**

Bleeding, Intususception & malignant transformation of adenoma

Carcinoma of the colon

Incidence: the commonest GIT malignancy . males > females , >60 y

P.F: Excess **Fat** & refined **Carbs.** intake , Lack of **Fibers** & vitamins

Genetic predisposition :

- 1- **APC** mutation (with K-RAS & P53 mutation)
- 2- **HPCC** Hereditary non polyposis colorectal cancer "DNA mismatch repair mutation", or "microsatellite pathway"

P.L.: Adenomas (Tubular – Villous – T.V. – FAP) – IBD (crohn's – UC)

Sites: **Left colon** > right colon , mainly **rectum**, and has **better prognosis** due to early detection

Gross: Fungating polypoid (cecum) – Malignant ulcer (**left colon**) – annular (rectum)

Micro:

- o Adenocarcinoma
- o Mucooid adenocarcinoma
- o Signet ring carcinoma

C/P: Bleeding – obstruction & pain – Cachexia - iron def anemia

Complications:

- o Spread (D – L – B – **Transceolomic**)
- o 2ry infection
- o Bleeding per rectum or chronic bleeding in right cancer colon → anemia
- o Perforation & fistula (Recto-vaginal, recto-vesical)
- o Intestinal obstruction

Staging:

Stage	Level of involvement
Tumor	
T1	Limited to mucosa and submucosa
T2	Extension into but not through muscularis propria
T3	Invasion of perirectal fat
T4	Invasion of adjacent structures
Nodes	
N0	No involved lymph nodes
N1	Fewer than four regional nodes involved
N2	More than four regional nodes involved
N3	Distant nodes involved
Metastasis	
M0	No metastasis
M1	Distant metastasis

N.B.

Tis : insitu

Nx: cannot be assessed

Mx: cannot be assessed

N.B. Other malignant tumors of colon: Carcinoid – Lymphoma – Squamous cell C. – Melanoma- GIST

Typhoid fever

Aetiology: *Salmonella typhi* (by ingestion)

Pathogenesis:

Bacteria engulfed by macrophage in intestinal lumen → transferred into Peyer's patches → proliferation of Peyer's patches → mesenteric Lymphadenitis → bacteremia → RES proliferation → septicemia

Gross:

Ileum: multiple **Ulcers** (parallel to long axis, oval, necrotic floor)

L.N.s: Large, necrotic

Spleen: Large, Red & soft

Liver: Large with focal necrosis

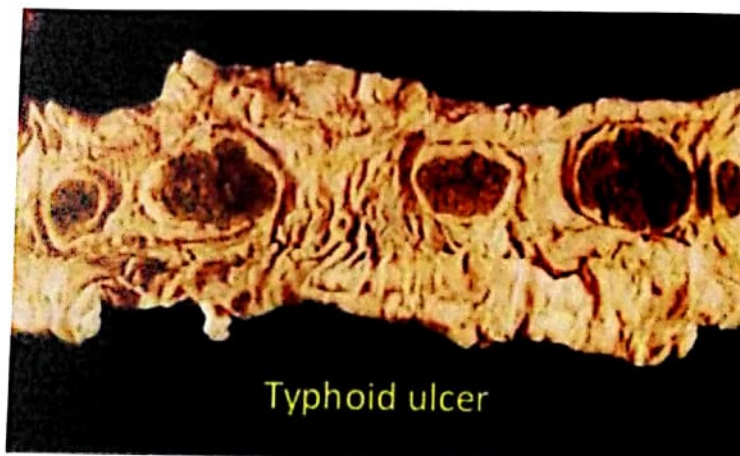


Micro: Inflammation (excess **macrophage**) + ulceration + necrosis of Lymphoid follicles

Diagnosis: 1st week (Blood culture), 2nd : (Urine & stool, **Widal**, Leukopenia with monocytosis)

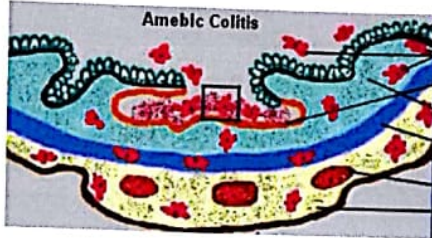
Complications:

- **Intestinal** (*not common*)
 - 2^{ry} infection, Bleeding & perforation
- **Extra intestinal**
 - Mesenteric lymphadenitis
 - Bacteremia
 - RES: hepatomegaly – splenomegaly
 - Bone marrow depression (*macrophage in BM*) → leucopenia with monocytosis
 - Toxemia → Zenker's degeneration
 - Septicimia → Suppurative inflammation in different organs (e.g. **Osteomyelitis** of tibia or sternum)
 - **Cholecystitis** → stone, and carrier state



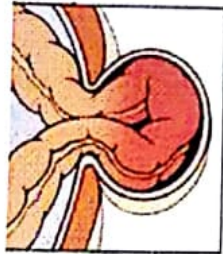
Typhoid ulcer

DysenteryChronic inflammation of colon, with **bloody**, mucoid stool, & tenesmus

	Bacillary	Amoebic
Aetiology	Shigella (contaminated food)	Entameba (contaminated food & drinks)
site	Colon	Colon (rectum – cecum)
Morphology	Swollen, red mucosa grey Pseudo membrane (fibrin, necrotic tissue, pus cells) 	Flask-shaped ulcers Undermined edged Necrotic floor – Base is muscular (edges & floor showed rounded large parasite surrounded by clear necrotic area & eosinophils) 
complication	2ry infection – bleeding- fibrosis- perforation Spread → Toxemia (toxic myocarditis, arteritis, peripheral neuritis) Straining → rectal prolapsed	2ry infection – bleeding- fibrosis- perforation Spread → amebic liver abscess Straining → rectal prolapsed Spastic colon Amoeboma (chronic inflammation & fibrosis) Anal cutaneous amebiasis

Intestinal obstruction**1-Acute:**

- **Functional**
 - **Neurogenic** :-Paralytic ileus (peritonitis – operative – injury)
 - **Vascular** ischemia_ (infarction)
- **Organic obstruction**
 - **Simple**: worms – Stone
 - **Strangulation**: Strangulated hernia – volvulus – intussusception
 -

	Intussusception	Volvulus	Strangulated hernia
definition	Invagination into another segment 	Twisting upon itself 	Protrusion & <u>constriction</u> by hernia defect 
causes	Children: Meckle's – over intake of fluid – lymphoid hyperplasia Adults: Parasites Polyps & tumors	Adhesions (sigmoid volvulus)	Weak abdominal muscle
complications	enumerate	enumerate	enumerate

2-Chronic:

Megacolon – Fibrosis & adhesions – Polyps – Tumors (inside or outside)

Complications & effects of intestinal obstruction:

- Proximal distention → Acute abdominal pain
- Vomiting & dehydration → Renal failure & Shock
- Constipation
- Venous occlusion → edema & hemorrhage
- Arterial occlusion → infarction → Perforation → peritonitis
- **Gangrene** → toxemia
- **In Chronic obstruction** : Proximal dilatation & hypertrophy – Distal collapse – **Stercoral ulcers** (ulcers due to **hard fecal mass**)

Pseudomembranous colitis: Caused by **Clostridium difficile**, & **Antibiotics** abuse. **Pseudomembrane** (necrotic cells & neutrophils). Fever, **watery** diarrhea & **protein** loss.

Ischemic bowel: **Mucosal** infarction (up to muscularis mucosa) – **Mural infarction** (mucosa & sub.) – **Transmural** (3 layers).

Hemorrhoides: dilated tortuous rectal or anal veins. Caused by **Straining** due to constipation, **pregnancy**, or **portal hypertension**. Fate → Bleeding or thrombosis

Appendicitis

Aetiology: Infection (Pyogenic) + Obstruction (*seeds-worm-spasm-tumors*)

Gross:

- **Catarrhal** (swollen red)
- **Suppurative** (covered by fibropurulent exudate – contains pus)
- **Gangrenous** (black tip – friable soft)

Microscopic of Suppurative appendicitis:

Lumen: pus and necrotic tissue

Mucosa: Ulceration + infiltrated by neutrophils and pus cells

Wall: pus cells – Lymphoid hyperplasia

Serosa: Fibrinous purulent exudate (peritonitis)

Complications:

- **Spread** → portal pyemia → multiple liver abscesses
- **Appendicular mass** : inflamed tissue in right iliac fossa
- **Appendicular abscess** : ruptured appendix → localized abscess
- **Fistula** with abdominal wall (rare)



Mucocele: appendix is distended with **mucous**, caused by appendicitis or mucinous cystic tumors. May lead to empyema. Or rupture → **pseudomyxoma pritonii**



Carcinoid tumor of Appendix

- Young age, originating from **Argentaffin cells**
- **Gross:** Nodule at the tip 1 cm
- **Micro:** Nests or acini of Uniform **polygonal cells** – granular cytoplasm
- **Carcinoid syndrome** (flushing – Asthma – Diarrhea) occurs only if the carcinoid tumor metastasize to liver

Other tumors: Mucinous cystadenoma, carcinoma (rare)

Malabsorption

One or more important nutrients are inadequately absorbed

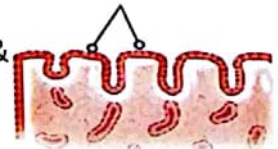
	Intraluminal Digestion	Terminal digestion	Transepithelial transport	Lymphatic transport
	Failure of breakdown of nutrients	Intestinal hydrolysis of Carbs	Through intestinal epith	Fluid transport
IBD	+	+	+	
-Coeliac disease -Tropical sprue -Parasitic enteritis		+	+	
Chronic pancreatitis & Cystic fibrosis	+			
Disaccharidase deficiency		+		
Abetalipoproteinemia			+	
Whipple disease				+

C/P & complications:

- Stool**: Bulky, pale, offensive
- **Abdominal** distention
- **Cachexia**
- **Ca** deficiency → Rickets, Osteomalacia, tetany
- **Iron & B12** → anemia
- **vit K** → Bleeding tendency

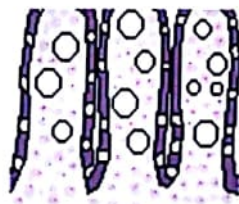
Coeliac disease

Gluten (gliadin) hypersensitivity → immune reaction → villous atrophy & intraepithelial lymphocytes



Whipple disease

Defective T cell immunity in middle age → bacterial infection



Tropheryma whippelli bacilli within the macrophages



PAS stain!

Case:

A 22-year old woman has had recurrent episodes of diarrhea. Crampy abdominal pain and slight fever over the last 2 years. In one episode, her stool shows occult blood. Colonoscopy reveals several sharply delineated areas of thickening in the bowel wall and mucosal ulceration. Completely normal areas are seen adjacent to ulcerated ones. Biopsies reveal full thickness inflammation of the bowel wall and noncaseating granuloma.

- ☐ What is the most likely diagnosis?
- ☐ What is the pathogenesis of this case?
- ☐ What are the common complications?
- ☐ What is the possible differential diagnosis?

1-Meckel's diverticulum is characterized by all EXCEPT:

- a. It is due to persistence of the vitelline duct.
- b. It is a mucosa-lined blind pouch.
- c. Its lumen does not communicate with the intestinal lumen.
- d. It may contain heterotrophic gastric tissue.
- e. Occurs in the antimesenteric border.

2- In typhoid fever, there is lack of:

- a. Eosinophils.
- b. Polymorphs.
- c. Lymphocytes.
- d. Macrophages.
- e. Plasma cells.

3- In Hirschsprung's disease, The colonic segment having no ganglion cells shows:

- a. Dilatation.
- b. Obstruction.
- c. Stenosis.
- d. Ulceration.
- e. Normal appearance.

4- The following is NOT a complication of amoebic dysentery:

- a. Ulceration.
- b. Perforation.
- c. Toxemia.
- d. Stricture formation.
- e. Bleeding per rectum.

5- The following does NOT occur likely in the large intestine:

- a. Peptic ulcer.
- b. Malignant ulcer.
- c. Bilharzial ulcer.
- d. Amoebic ulcer.
- e. Bacillary dysentery.

6- The following is NOT a feature of ulcerative colitis:

- a. Pseudopolypi.
- b. Skip lesions.
- c. Ulceration.
- d. Crypt abscess.
- e. Crypt atrophy.

7- Which of the following intestinal ulcer has a higher risk for malignant transformation:

- a. Peptic ulcer.
- b. Typhoid ulcer.
- c. Tuberculous ulcer.
- d. Ulcer of ulcerative colitis.
- e. Ulcer of crohn's disease.

8- The most important prognostic factor in colorectal carcinoma is:

- a. Tumor site
- b. Tumor size.
- c. Tumor type.
- d. Tumor grade.
- e. Degree of tumor infiltration.

9-Classification of colorectal carcinoma depends of the degree of:

- a. Glandular differentiation.
- b. Cytologic atypia.
- c. Mitotic activity.
- d. Tumor infiltration.
- e. None of the above.

10) A 45-year-old man has had vague abdominal pain and nausea for the past 3 years. He has no difficulty in swallowing and no heartburn following meals. Upper Gi endoscopy reveals antral mucosal erythema, but no ulcerations or masses. Biopsies are taken, and microscopically there is a chronic non-specific gastritis. Which of the following conditions most likely to be present in this man?

- a. Zollinger-Ellison syndrome
- b. Pernicious anemia
- c. Helicobacter pylori infection
- d. Adenocarcinoma
- e. Crohn's disease

11) A 25-year-old man has noted cramping abdominal pain for the past week associated with fever. On physical examination, there is right lower quadrant tenderness. His stool is positive for occult blood. A colonoscopy reveals multiple, small, deep ulcers, having undermined edges with intact mucosa between the ulcers. The process involves her ascending colon, but the transverse and descending portions of the colon are not affected. Which of the following microscopic findings is most likely to be present in biopsies from his colon?

- a. Crypt abscesses
- b. Entameba histolytica organisms
- c. Adenocarcinoma
- d. Bank. Like mucosal fibrosis
- e. Non-caseating granulomas

12) A 39-year old man is having a routine physical examination because of a history of colon cancer in his family. His stool is positive for occult blood. Colonoscopy reveals multiple polyps in the ascending colon, including small 5cm pendunculated tubular adenomas and 1cm tubulovillous adenomas. Also, few 2cm sessile villous adenoma was found in the cecum, containing a focus of well-differentiated adenocarcinoma. Which of the following is the most likely diagnosis?

- a. Peutz-jeghers syndrome
- b. Chronic ulcerative colitis
- c. Crohn's disease
- d. Familial adenomatous polyposis
- e. Hamartomatous polyps

13) A 60-year-old man has had anorexia, vomiting, and vague abdominal pain accompanied by weight loss of 6 kg over the past two months. He becomes progressively cachectic and dies. At autopsy, the stomach is shrunken with the gastric wall thickened to 2cm and the stomach is converted to thick, rigid short tube. Multiple tan umbilicated masses from 1 to 4 cm in size are scattered over the surface of the liver. Which of the following conditions most likely explain the post-mortem findings?

- a. Malignant gastric ulcer
- b. Hepatocellular carcinoma
- c. Atrophic gastritis with pernicious anaemia
- d. Linitis plastica with hepatic metastatic nodules
- e. Non-Hodgkin's gastric lymphoma

14) 51-year-old man has a 1cm polyp on a narrow stalk located in the descending colon. Microscopic examination shows crowded, tubular, atypical colonic-type glands. The stalk of the polyp is covered with normal colonic epithelium. Which of the following is the most likely diagnosis?

- a. Adenomatous polyp
- b. Crohn's disease
- c. Peutz —Jeghers polyp
- d. Ulcerative colitis
- e. Hyperplastic polyp

15) A 54-year-old man has complained for 5 months of upper abdominal pain accompanied by nausea. Microscopic examination of gastric biopsies reveals acute and chronic mucosal inflammation along with the presence of *Helicobacter pylori* organisms. The presence of these organisms is most likely to be associated with which of the following?

- a. Gastric mucosal invasion with septicemia
- b. Duodenal peptic ulceration
- c. Development of pernicious anemia
- d. Hypochlorhydria with atrophic gastritis
- e. Development of large B cell lymphoma

16) A 56-year-old woman presents with supraclavicular solitary enlarged lymph node. She states that she has lost about 15 pounds over the last few months and has had severe heartburn. Histopathological examination of the lymph node reveals infiltration by malignant epithelial neoplasm, made-up of mucin — positive cells. Which of the following abnormalities is most likely to be present in this individual?

- a. Adenocarcinoma of the oesophagus
- b. Clear cell carcinoma of the kidney
- c. colloid carcinoma of the breast
- d. Mucoepidermoid carcinoma of the parotid
- e. Signet cell carcinoma of the stomach